

## **FIBER CEMENT COMPOSITE MATERIALS USING SIZED CELLULOSE FIBERS**

### Abstract of the Disclosure

This invention discloses a new technology related to cellulose fiber reinforced cement composite materials using cellulose fibers that are treated with inorganic and/or organic resins to make the fibers more hydrophobic, as well as other chemical treatments. This invention discloses four aspects of the technology: fiber treatment, formulations, methods and the final product. This technology advantageously provides fiber cement building materials with the desirable characteristics of reduced water absorption, reduced rate of water absorption, lower water migration, and lower water permeability. This invention also imparts the final products improved freeze-thaw resistance, reduced efflorescence, and improved rot and UV resistances, compared to conventional fiber cement products. These improved attributes are gained without loss in dimensional stability, strength, strain or toughness. In some cases the physical and mechanical properties are improved. This invention also discloses the method of treating cellulose fibers with various chemicals to impart the fiber hydrophobicity for applications in the fiber reinforced cement composite materials.

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